



10/22/86

sour taste. Soluble in water; insoluble in alcohol, ether, and organic solvents; stable in acidic solutions; decomposes in alkaline solution.

Derivation: Isolation from muscle tissue; yeast phosphorylation of adenosine.

Use: Biochemical research.

Commercially available as the disodium, dipotassium, and dibarium salts.

adenylic acid (adenosine monophosphate; AA; adenosine phosphate; adenosinephosphoric acid; AMP) $C_{10}H_{14}N_5O_7P$. The monophosphoric ester of adenosine; i.e., the nucleotide containing adenine, D-ribose and phosphoric acid. Adenylic acid is a constituent of many important coenzymes. Cyclic adenosine-3',5'-monophosphate is designated by biochemists as cAMP (q.v.).

Properties (muscle adenylic acid): Crystalline solid; m.p. 196–200°C. Readily soluble in boiling water. Gives only traces of furfural when boiled with 20% hydrochloric acid.

(yeast adenylic acid monohydrate): Long crystalline rods. Decomposes 195°C. Anhydrous form decomposes at 208°C. Almost insoluble in cold water; slightly soluble in boiling water. Gives quantitative yield of furfural when distilled with 20% HCl.

Derivation: Yeast adenylic acid by precipitation from yeast nucleic acid. Muscle adenylic acid by precipitation from tissues; by hydrolysis of ATP with barium hydroxide; by enzymatic phosphorylation of adenosine.

Uses: Medicine and biochemical research.

adhesion. The state in which two surfaces are held together by interfacial forces, which may consist of valence forces or interlocking action, or both. (ASTM)

adhesive. Any substance, inorganic or organic, natural or synthetic, that is capable of bonding other substances together by surface attachment. A brief classification by type is as follows:

I. Inorganic

1. Soluble silicates (water glass)
2. Phosphate cements
3. Portland cement (calcium oxide-silica)
4. Other hydraulic cements (mortar, gypsum)
5. Ceramic (silica-boric acid)
6. Thermosetting powdered glasses ("Pyroceram")

II. Organic

1. Natural

(a) Animal

Hide and bone glue; fish glue
Blood and casein glues

(b) Vegetable

Soybean, starch, cellulose, rubber latex
and rubber-solvent (pressure-sensitive).
Gums, terpene resins (rosin), mucilages

(c) Mineral

Asphalt, pitches, hydrocarbon resins

2. Synthetic

(a) Elastomer-solvent cements

(b) Polysulfide sealants

(c) Thermoplastic resins (for hot-melts)

Polyethylene, isobutylene, polyamides,
polyvinyl acetate

(d) Thermosetting resins

Epoxy, phenolformaldehyde, polyvinyl
butyral, cyanoacrylates.

(e) Silicone polymers and cements

See also following entries. For further information refer

to Adhesives Manufacturers Association, 441 Lexington Ave., New York.

adhesive, high-temperature. (1) Organic polymers, e.g., polybenzimidazoles, that retain bonding strength up to 500°F for a relatively long time (500–1000 hours); above 500°F, strength drops rapidly, 80% being lost after 10 minutes at 1000°F.

(2) Inorganic (ceramic), e.g., silica-boric acid mixtures or cermets produce bonds having high strength above 2000°F; adhesive lap-bond strengths can be over 2000 psi at 1000°F. These adhesives are used largely for aerospace service, and metal/metal and glass/metal seals.

adhesive, hot-melt. A solid, thermoplastic material which quickly melts upon heating, and then sets to a firm bond on cooling. Most other types of adhesives set by evaporation of solvent. Hot-melt types offer the possibility of almost instantaneous bonding, making them well-suited to automated operation. In general, they are low-cost, low-strength products, but are entirely adequate for bonding cellulosic materials. Ingredients of hot-melts are polyethylene, polyvinyl acetate, polyamides, hydrocarbon resins, as well as natural asphalts, bitumens, resinous materials, and waxes.

Uses: Rapid and efficient bonding of low-strength materials, e.g., bookbinding, food cartons, side-seaming of cans, miscellaneous packaging applications.

See also sealant.

adhesive, rubber-based (cement, rubber). (1) A solution of natural or synthetic rubber in a suitable organic solvent, without sulfur or other curing agent; (2) a mixture of rubber (often reclaimed), filler, and tackifier (pine tar, liquid asphalt) applied to fabric backing (pressure-sensitive friction tape); (3) a room-temperature curing rubber-solvent-curable mixture, often made up in two parts, which are blended just before use; (4) rubber latex, especially for on-the-job repairing, such as conveyor belts; (5) silicone rubber cement (see "RTV" and silicone (uses)).

Hazard: Those containing organic solvents, (1) and (3) above, are flammable.

Shipping Regulations: Cement, liquid, n.o.s., (Rail) Red label. (Air) Flammable Liquid label.

adiabatic. A process, condition, or operation during which there is no gain or loss of heat from the environment.

adipic acid (hexanedioic acid; 1,4-butanedicarboxylic acid) $COOH(CH_2)_4COOH$.

Properties: White, crystalline solid. M.p. 152°C; b.p. (100 mm) 265°C; sp. gr. (20/4°C) 1.360; flash point (closed cup) 385°F. Slightly soluble in water; soluble in alcohol and acetone. Relatively stable. Combustible; low toxicity.

Derivation: Oxidation of cyclohexane, cyclohexanol, or cyclohexanone with air or nitric acid.

Grades: Technical; F.C.C.

Containers: Glass bottles; tins; 50-lb multiwall paper bags; drums.

Uses: Manufacture of nylon and of polyurethane foams; preparation of esters for use as plasticizers and lubricants; food additive (neutralizer and flavoring agent); adhesives.

"Adipol."™ Trademark for a series of adipate plasticizers.

and odor. Insoluble in water; soluble in ether, chloroform, amyl acetate, benzene, and carbon disulfide and slightly soluble in alcohol. Sp. gr. 0.914-0.921; saponification value 188-193; iodine value 102-128. Flash point 490°F. Combustible. Nontoxic and non-drying. Moderate tendency to spontaneous heating. Chief constituents: linoleic and oleic acids (unsaturated), palmitic and stearic (saturated).

Derivation: The germ of common corn (Indian corn, Zea mays) is removed from the grain and pressed.

Grades: Crude; refined; U.S.P.; technical.

Containers: Drums; tank cars.

Uses: Foodstuffs; soap; lubricants; leather dressing; factice; margarine; salad oil; hair dressing; solvent.

cornstarch. A carbohydrate polymer derived from corn of various types; composed of 25% amylose and 75% amylopectin; a white powder which swells in water. It is the most widely used starch in the U.S. The so-called waxy variety (made from waxy corn) contains only branched amylopectin molecules. Its chief uses are as a source of glucose; in the food industry as a filler in baking powder and thickening agent in various food products and in adhesives and coatings. It has been proposed as an additive to plastics to promote rapid degradation in such products as bottles and waste containers. See also starch.

corn steep liquor. The dilute aqueous solution obtained by soaking corn kernels in warm 0.2% sulfur dioxide solution for 48 hours as the first step in the recovery of corn starch, corn oil, and gluten from corn. The solution contains mineral matter as well as soluble organic material extracted from the corn. It is used as a growth medium for penicillin and other antibiotics, and it is also concentrated and used as an ingredient of cattle feeds.

corn sugar. See dextrose.

corn syrup. See glucose syrup.

"Corobex."¹⁵⁹ Trademark for a series of organotin salt compounds, phenylmercuric salt compounds and quaternary compounds used as bacteriostatic and fungistatic finish in the textile, plastics, and rubber industries.

Hazard: Probably toxic by ingestion.

corona. An electrical discharge effect which causes ionization of oxygen and the formation of ozone. It is particularly evident near high-tension wires and in spark-ignited automotive engines. The ozone formed can have a drastic oxidizing effect on wire insulation, cable covers and hose connections; for this reason such accessories are made of oxidation-resistant materials such as nylon, neoprene, and other synthetics.

"Corragel."¹⁶⁰ Trademark for a colloidal clay that functions as a unique starch adhesive additive.

corresponding states (reduced states). Two substances are in corresponding states when their pressures, volumes (or densities) and temperatures are proportional, respectively, to their critical pressures, volumes (or densities) and temperatures. If any two of these ratios are equal, the third must also be equal. This principle has been useful in the development of physical and thermal properties of substances.

corrosion. (1) The electrochemical degradation of metals or alloys due to reaction with their environment; it is accelerated by the presence of acids or

bases. In general, the corrodability of a metal or alloy depends upon its position in the activity series (q.v.). Corrosion products often take the form of metallic oxides; in the case of aluminum and stainless steel, this is actually beneficial, for the oxide forms a strongly adherent coating which effectively prevents further degradation. Hence these metals are widely used for structural purposes. The rusting of iron is a familiar example of corrosion, which is catalyzed by moisture. Acidic soils are highly corrosive; sulfur is a corrosive agent in automotive fuels and in the atmosphere (as SO₂). Sodium chloride in the air at locations near the sea is also strongly corrosive, especially at temperatures above 70°F. Copper, nickel, chromium, and zinc are among the more corrosion-resistant metals, and are widely used as protective coatings for other metals. (See also tarnish). Excellent corrosion-resistant alloys are stainless steel (18 Ni-8Cr), monel metal (66 Ni-34Cu) and duralumin. See also protective coatings; paints.

(2) The destruction of body tissues by strong acids and bases. See corrosive material.

"Corrosion Inhibitor CS."¹⁶¹ Trademark for a synergistic combination of sodium nitrate-borax and organic inhibitors; used to prevent corrosion of ferrous and non-ferrous metal and alloy surfaces in low-makeup closed cooling and heating systems.

"Corrosion Inhibitor NPA."¹⁶² Trademark for nonyl-phenoxyacetic acid.

corrosive sublimate. Obsolete term for mercuric chloride.

corrosive material. Any solid, liquid, or gaseous substance that burns, irritates, or destructively attacks organic tissues, most notably the skin and, when taken internally, the lungs and stomach. Among the more widely used chemicals that have corrosive properties are the following:

acetic acid, glacial	hydrofluoric acid
acetic anhydride	nitric acid
bromine	potassium hydroxide
chlorine	sodium hydroxide
fluorine	sulfuric acid
hydrochloric acid	

See also toxic materials

"Corrosol."¹⁶³ Trademark for phosphoric acid-type metal conditioners and rust removers used to remove rust from steel and prepare it for further processing or prepare normally nonreceptive zinc and aluminum surfaces for paint.

"Cortate."¹⁶⁴ Trademark for deoxycorticosterone acetate.

"Cortel."¹⁶⁵ Trademark for hydrocortisone.

corticoid hormone. A hormone produced or isolated from the cortex (external layer) of the adrenal gland. Corticoid hormones now used in medicine include cortisone, hydrocortisone, deoxycorticosterone, fludrocortisone, prednisone, prednisolone, methyl prednisolone, triamcinolone, dexamethasone, corticotropin (ACTH), and aldosterone. Some occur naturally in adrenal extract; others are modifications of the natural hormones. All are now made synthetically. They are derivatives of cyclopentanophenanthrene.

See also cortisone, ACTH.

soluble in alcohol, ether, and chloroform; slightly soluble in water.

Grade: N.F.

Hazard: Toxic by ingestion; strong irritant to skin and tissue. Tolerance (as Sn), 2 mg per cubic meter of air.

Uses: Fluoride source in toothpastes; medicine.

Note: Stannous hexafluorozirconate is said to be more effective than the fluoride in preventing dental caries.

stannous octoate. See stannous 2-ethylhexoate.

stannous oleate (tin oleate) $\text{Sn}(\text{C}_{18}\text{H}_{33}\text{O}_2)_2$.

Properties: Light yellow liquid; insoluble in water and methanol; soluble in benzene, toluene, petroleum ether; hydrolyzed by acids and bases.

Hazard: Toxic. Tolerance (as Sn), 0.1 mg per cubic meter of air. Absorbed by skin.

Uses: Polymerization catalyst; inhibitor.

stannous oxalate (tin oxalate) SnC_2O_4 .

Properties: Heavy, white, crystalline powder; sp. gr. 3.56; m.p., decomposes at ca. 280°C ; soluble in acids; insoluble in water and acetone.

Derivation: By the action of oxalic acid on stannous oxide.

Grades: Technical; C.P.; reagent.

Hazard: Toxic. Tolerance (as Sn), 0.1 mg per cubic meter of air. Absorbed by skin.

Uses: Dyeing and printing textiles; catalyst for esterification reactions.

stannous oxide (tin oxide; tin protoxide) SnO .

Properties: Brownish black powder; unstable in air. Reacts with acids and strong bases; insoluble in water.

Sp. gr. 6.3; m.p. 1080°C (600 mm), decomposes. A nuisance particulate. Low toxicity.

Derivation: By heating stannous hydroxide in a current of carbon dioxide.

Grades: Technical; C.P.

Containers: 1-, 5-lb bottles; wooden kegs.

Uses: Reducing agent; intermediate in preparation of stannous salts as used in plating and glass industries; pharmaceuticals; soft abrasive (putty powder).

stannous pyrophosphate $\text{Sn}_2\text{P}_2\text{O}_7$.

Properties: White, free-flowing crystals insoluble in water. Sp. gr. 4.009 (16°C).

Uses: Toothpaste additive.

stannous sulfate (tin sulfate) SnSO_4 .

Properties: Heavy, white or yellowish, crystals; soluble in water and sulfuric acid. Water solution decomposes rapidly. M.p. loses sulfur dioxide at 360°C .

Derivation: Action of sulfuric acid on stannous oxide.

Containers: Fiber drums.

Hazard: Toxic. Tolerance (as Sn), 2 mg per cubic meter in air.

Uses: Dyeing; tin-plating; particularly for plating automobile pistons and steel wire.

stannous sulfide (tin monosulfide; tin protosulfide; tin sulfide) SnS .

Properties: Dark gray or black crystalline powder; sp. gr. 5.080; b.p. 1230°C ; m.p. 880°C . Soluble in concentrated hydrochloric acid (decomposes); insoluble in dilute acids and water.

Hazard: Toxic. Tolerance (as Sn), 2 mg per cubic meter in air.

Uses: Making bearing material; catalyst in polymerization of hydrocarbons; chemical reagent.

stannous tartrate (tin tartrate) $\text{SnC}_4\text{H}_4\text{O}_6$.

Properties: Heavy, white, crystalline powder; soluble in water, dilute hydrochloric acid.

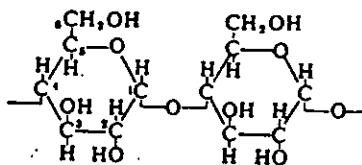
Derivation: Action of tartaric acid on stannous oxide. Hazard: Toxic. Tolerance (as Sn), 0.1 mg per cubic meter of air.

Uses: Dyeing and printing fabrics.

stannum. The Latin name for tin, hence the symbol Sn in chemical nomenclature.

staple. A cotton fiber, usually in reference to length, i.e., short or long staple cotton.

starch. A carbohydrate polymer having the repeating unit:



It is composed of about 25% amylose (anhydroglucopyranose units joined by glucosidic bonds) and 75% amylopectin, a branched-chain structure.

Properties: White, amorphous, tasteless powder or granules; various crystalline forms may be obtained, including microcrystalline. Irreversible gel formation occurs in hot water; swelling of granules can be induced at room temperature with such compounds as formamide, formic acid, and strong bases and metallic salts.

Occurrence: Starch is a reserve polysaccharide in plants (corn, potatoes, tapioca, rice, and wheat are commercial sources).

Grades: Commercial; powdered; pearl; laundry; technical; reagent; edible; U.S.P.

Uses: Adhesive (gummed paper and tapes, cartons, bags, etc.); machine-coated paper; textile filler and sizing agent; beater additive in papermaking; gelling agent and thickener in food products (gravies, custards, confectionery); oil-well drilling fluids; filler in baking powders (cornstarch); fabric stiffener in laundering; urea-formaldehyde resin adhesives for particle board and fiberboard; explosives (nitrostarch); dextrin (starch gum); chelating and sequestering agent in foods; indicator in analytical chemistry; anticaking agent in sugar; face powders; adherent and mold-release agent; polymer base (see next entry).

starch-based polymer. (1) A reactive polyol derived from a mixture of a starch with dibasic acids, hydrogen-donating compounds, and catalysts dissolved in water; the slurry is subjected to high temperatures and pressures, yielding a low-viscosity polymer in a 50% solids aqueous solution. A molecular rearrangement takes place, and the polymer formed is completely different from starch in structure and properties. It can be further reacted with acids, bases and cross-linking agents. Suggested uses are in high wet-strength papers, as binders in paper coatings, as moisture barriers in packaging, and as water-resistant adhesives.

(2) Yeast fermentation of starch to form a biodegradable plastic called pullulan (a trigluco polysaccharide) has been reported to be commercially feasible.

starch dialdehyde. Starch in which the original anhydroglucose units have been partially oxidized to dialdehyde form by oxidation, for example, the product of the oxidation of cornstarch by periodic acid.

Available in cationic dispersions up to 15% solids for mixing with paper pulp.

Uses: Thickening agent; tanning agent; binder for leaf tobacco; adhesives; wet-strength additive in paper.

starch, modified. Any of several water-soluble polymers derived from a starch (corn, potato, tapioca) by acetylation, chlorination, acid hydrolysis, or enzymatic action. These reactions yield starch acetates, esters and ethers in the form of stable and fluid solutions and films. Modified starches are used as textile sizing agents and paper coatings. Thin-boiling starches have high gel strength; oxidized starches made with sodium hypochlorite have low gelling tendency. Introduction of carboxyl, sulfonate, or sulfate groups into starch gives sodium or ammonium salts of anionic starches, yielding clear, non-gelling dispersions of high viscosity. Cationic starches result from addition of amino groups.

The glucose units of starch can be crosslinked with such agents as formaldehyde, soluble metaphosphates, and epichlorohydrin; this increases viscosity and thickening power for adhesives, canned foods, etc.

starch phosphate. An ester made from the reaction of a mixture of orthophosphate salts (sodium dihydrogen phosphate and disodium hydrogen phosphate) with starch.

Properties: Soluble in cold water (unlike regular starch), and has high thickening power. Can be frozen and thawed repeatedly without change in physical properties.

Uses: Thickener for frozen foods; taconite ore binder; in adhesives, drugs, cosmetics; substitute for arabic gum, locust bean gum, and carboxymethyl cellulose.

starch syrup. See glucose.

starch, thin-boiling. See starch, modified.

starch xanthate. A water-insoluble synthetic polysaccharide made by reacting starch with sodium hydroxide and carbon disulfide. Biodegradable. Used to encapsulate pesticides; the coating, though insoluble, is permeable to water, thus slowly releasing the pesticide. Also used as a rubber reinforcing agent.

starch xanthide. Starch xanthate which has been cross-linked with oxygen; used as strengthening agent in paper and manufacture of powdered rubbers.

"Starex."⁷⁷ Trademark for a heat-treated tall oil rosin. Uses: Rosin esters; rosin-modified synthetic resins; lined rosin; paper size.

"Starez."¹⁷⁰ Trademark for a modified polyvinyl acetate monopolymer resin emulsion. Used as a heatseal coating.

"Starfol."²²¹ Trademark for various grades of glyceryl monostearate and butyl stearate. Most grades have been approved for food additives.

"Starwax" 100.¹²³ Trademark for a hard petroleum microcrystalline wax; minimum m.p. 180° F.

"Sta-set."³⁰ Trademark for a trichlorophenoxypropionic acid product for use on apples to reduce preharvest drop.

"Sta-Sol" Lecithin Concentrate.⁴⁹² Trademark for mixtures of naturally occurring phosphatides or phospholipids, derived from soybean oil. They contain some residual oil as a solvent or carrier. Available in regular (plastic) or fluid (pourable liquid) form, bleached and unbleached. They act as emulsifiers, stabilizers, antioxidants.

Uses: Foods, especially chocolate and compound coatings, candies, bakery products, margarine; industrial uses; paints and printing inks, soaps and cosmetics, textile compounds, leather tanning, petroleum lubricants; animal feeds and pet foods.

"Statex."¹³³ Trademark for furnace carbon blacks used in rubber, printing inks and protective coatings. There are numerous grades. See furnace black.

"Stat-Eze."⁴³⁰ Trademark for a specially prepared quaternary ammonium compound, used as an externally applied antistatic agent on plastics, textiles, paper and carpeting.

"Sta-Thik" Starch.⁴⁹² Trademark for a modified corn starch of high viscosity.

Uses: Wet-end additive in paper industry; binder for both cellulose and mineral wool building materials; textile finishing; adhesives; and briquetting.

Staudinger, Hermann (1881-1965). A German chemist, winner of Nobel Prize in 1953 for his pioneer work on the structure of macromolecules and polymerization. A large part of modern high-polymer chemistry is based on his original research.

"Staybelite."²⁶⁶ Trademark for hydrogenated rosin, a pale, thermoplastic resin. Acid number 165; USDA color X; softening point 75°C; saponification number 167.

Uses: Adhesives and protective coatings.

"Stayco" Starches.⁴⁹² Trademark for a family of oxidized starches. Available in five viscosities: S, A, G, C, and M. Used by the paper industry for wet-end addition, in tub, press, and calender sizing, and as coating adhesives.

"Stayrite."¹⁰⁴ Trademark for stabilizers used to provide increased heat and light stability to vinyl resins. Available in range of products, both liquid and solid.

"Staysize" 109 Starch.⁴⁹² A white, highly uniform, chemically modified corn starch in pearl form developed for surface sizing.

"Stazyme" Starch.⁴⁹² A thick-boiling corn starch buffered to a pH of 6.3 to 7.0 to produce the proper pH for enzyme conversion in the paper mill.

steam. An allotropic form of water (H₂O) formed at 212° F (100° C) and having a latent heat of condensation of 540 calories per gram. It has a number of industrial uses, one of the most important being the production of hydrogen by the steam-hydrocarbon gas process (reforming), by the steam-water gas process; the steam-iron process, and the steam-methanol process. It is also used in steam cracking of gas oil and naphtha, in food processing, as a cleaning agent, in rubber vulcanization, as a source of heat and power, and in distillation of plants for production of essential oils and perfumes.

Steam from geothermal sources such as hot springs and fumaroles is being utilized as an energy source. See geothermal energy, latent heat.

steam distillation. See hydrodistillation.

steam reforming. See reforming.

steapsin. A lipase in the pancreatic juice. See enzyme.

stearamide CH₃(CH₂)₁₆CONH₂. Octadecanamide. Properties: Colorless leaflets; m.p. 109° C; b.p. 251° C (12 mm); insoluble in water; slightly soluble in alcohol and ether.

Use: Corrosion inhibitor in oil wells.

devulcanization. Technically a misnomer, since vulcanization is irreversible. The term is used to describe the softening of a vulcanizate caused by heat and chemical additives during reclaiming.

dew point. Temperature at which air is saturated with moisture, or in general the temperature at which a gas is saturated with respect to a condensable component.

dexamethasone (9-alpha-fluoro-16-alpha-methylprednisolone) $C_{22}H_{29}FO_5$. A corticosteroid.

Properties: Crystals; m.p. 262-264°C. Insoluble in water; somewhat soluble in organic solvents.

Grade: N.F.

Use: Medicine and veterinary medicine.

"Dexedrine."⁷¹ Trademark for dextroamphetamine sulfate.

"Dexet."²³³ Trademark for aluminous cement, and related ingredients for use chiefly in oil wells.

"Dexon."¹⁸¹ Trademark for para-dimethylaminobenzenediazo sodium sulfonate (q.v.).

dextran (macrose). Certain polymers of glucose which have chain-like structures and molecular weights up to 200,000. Produced from sucrose by *Leuconostoc* bacteria; occurs as slimes in sugar refineries, on fermenting vegetables or in dairy products. Clinical dextran is standardized to a low molecular weight (75,000); is made by partial hydrolysis and fractional precipitation of the high molecular weight particles.

Properties: Stable to heat and storage. Soluble in water, making very viscous solutions. Solutions can be sterilized. Combustible; nontoxic.

Uses: Blood plasma substitute or expander; confections; lacquers; oil-well drilling muds; filtration gel; food additive.

dextranase. An enzyme reported to be effective in reducing dental caries.

dextran sulfate. See sodium dextran sulfate.

"Dextrid."²³⁴ Trademark for an organic polymer used for control of filtration, mud rheology and solids in drilling muds. Stabilized against microbiological degradation. A low percentage controls filtration without appreciable viscosity increase.

dextrin (starch gum). A group of colloidal products formed by the hydrolysis of starches. Industrially it is made by treatment of various starches with dilute acids or by heating dry starch. The yellow or white powder or granules are soluble in water and insoluble in alcohol and ether.

Uses: Adhesives; thickening agent; sizing paper and textiles; substitute for natural gums; food industry; glass-silvering compositions, printing inks; felt manufacture; substitute for lactose in penicillin manufacture.

"Dextrinase" A.²¹² Trademark for a fungal amylase which converts starches and dextrins to maltose and dextrose.

Uses: Syrups and other products high in reducing sugars.

dextromethorphan hydrobromide. (*d*-3-methoxy-N-methylmorphinan hydrobromide)
 $C_{18}H_{25}NO \cdot HBr \cdot H_2O$.

Properties: Practically white crystals or crystalline powder possessing a faint odor; slightly soluble in

water; freely soluble in alcohol and chloroform; insoluble in ether. Specific rotation 200 mg/10 ml solution +26 to +28°; pH (1 in 50 solution) 5.2-6.5.

Grade: N.F.

Use: Medicine.

dextrorotatory. Having the property when in solution of rotating the plane of polarized light to the right or clockwise. Dextrorotatory compounds are given the prefix *d* or (+) to distinguish them from their levorotatory, *l* or (-) isomers. The plus sign (+) is now preferred.

See optical rotation.

dextrose. See glucose, which is the preferred term.

dextrose equivalent (D.E.). The total amount of reducing sugars expressed as dextrose that is present in a corn syrup, calculated as a percentage of the total dry substance. The usual technique for determining D.E. in the corn products industry is the volumetric alkaline copper method. See also glucose syrup.

DDDT (difluorodiphenyltrichloroethane)
 $(FC_6H_4)_2CHCCl_3$. Fluorine analog of DDT.

Properties: A low-melting white solid; m.p. 45.5°C. Odor resembling ripe apples; does not have broad killing power of DDT toward all insects but is more effective against flying insects, especially house flies.

Derivation: By condensing chloral and fluorobenzene in the presence of sulfuric acid or chlorosulfonic acid.

Uses: Insecticide.

"DFL No. 3."²³ Trademark for a solution of buffered phosphate esters, used as a lubricant release agent and corrosion inhibitor for synthetic rubber driers.

DFP. Abbreviation for diisopropyl fluorophosphate.

DHA. Abbreviation for dihydroxyacetone.

"DHA."²³³ Trademark for fungicides comprised of dehydroacetic acid and its salts.

"DHP-MP."²³³ Trademark for 1,4-bis(2-hydroxypropyl) 2-methylpiperazine.

DHS. Abbreviation for dihydrostreptomycin.

Di Symbol for didymium.

di-. Prefix meaning two. See also bi-.

"Diabestos."²¹⁸ Trademark for a filteraid of "Dicalite" diatomite and selected asbestos fibers.

"Diabinese."²³⁹ Trademark for chloropropamide.

"Diablo."²⁴⁴ Trademark for a group of chemically inert liquids containing 70% chlorine. Used in flammable compounds to impart flame retardance.

diacetic acid. See acetoacetic acid.

diacetin (glyceryl diacetate)
 $CH_3OOCCH_2CHOHCH_2OOCCH_3$.

Properties: Hygroscopic liquid. It is a mixture of isomers. Sp. gr. 1.18; b.p. 259°C (approx.); refractive index 1.44. Miscible with water, benzene, and alcohol; the commercial mixture gels about -30°C. Combustible. Low toxicity.

Derivation: Heating one mole of glycerin with two moles of glacial acetic acid.

Grades: Technical.

Uses: Plasticizer and softening agent; solvent for cellulose derivatives, "Glyptal" resins, shellac.